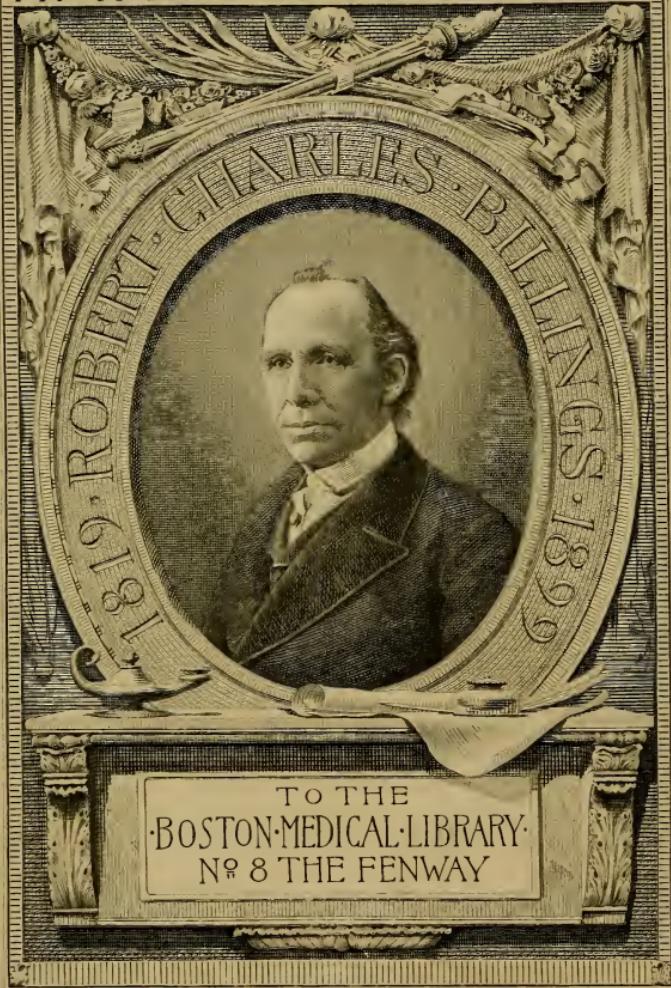




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FROM THE FUND BEQUEATHED BY



523 - 1903





SOME  
REFLECTIONS  
ON THE  
CAUSES and CIRCUMSTANCES,  
That may Retard or Prevent the  
*Putrefaction of Dead Bodies:*

Occasioned

By an Account of a Body found entire and imputrid  
at *Staverton* in *Devonshire*, eighty-one Years after  
its Interment :

In a LETTER to the  
Society of NAVY SURGEONS.

WITH

An Attestation of the Fact, and of the similar  
State of three Bodies, discovered 14 Years since  
in *St. Martin's, Westminster*, and interred there  
last Century. *Written at the Desire of their  
medical Committee.*

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By J. KIRKPATRICK, M.D.  
Honorary Member of the SOCIETY.

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## T H E P R E F A C E.

**T**HE Plan of the Society of Navy Surgeons, re-printed at the End of this Disquisition, having produced, amongst several other Correspondencies, the following distinct and curious Account of a most remarkable Preservation of the human Body, 81 Years after its Interment, their medical Committee have judged it most proper to publish it, with their Reflections on it, in this Manner, apart from any of their medical or chirurgical Cases or Observations; as it seems a Matter rather of great and general Curiosity, than of any particular salutary Use; which indeed is sufficiently admitted by the ingenious Correspondent in the Letter itself. And yet, in the Discussion of many curious Subjects, not directly of a medical Nature, it is not improbable, that a few medical, as well as philosophical Reflections, may sometimes very justly and naturally occur, and of course render them more strictly within the Compass of our Plan.

The Committee conducted themselves with sufficient Caution on so abstruse and uncommon a Subject, not to trouble the Public with any Reflections on it, before its Certainty became incontestable; and they were convinced some Account of it, from a creditable Eye-Witness, had been forwarded to the Royal Society, by a learned physical Member of it. When the Case was thus situated, they imagined they should be wanting in the Respect due to their Correspondent, who favoured them with a very early Communication of it (and perhaps have been suspected of proving languid in the future Prosecution of their Design) not to have complied with his Request of publishing their Sentiments on the Circumstances, that might cause, or concur to this extraordinary Effect; which appeared very wonderful to them at first, and did not meet with a very early Credit in the Republic of Medicine. Indeed, as some of the antient and modern Compilers of natural History have, not seldom, manifestly exceeded in the Marvelous, and sometimes degenerated into the Trivial, a reasonable Degree of Incrédulity on extraordinary Occasions is a Respect, which every Author seems to owe the Public,

as

as they can be very little obliged to the Propagators of Delusion in any Shape. But on the other Hand, a certain Portion of Credit is not less rationally due to Facts, attested by Eye-Witnesses entirely competent, reputable, and wholly disinterested in any Consequences of them; however rare, or difficult to account for, the Facts may be. A full and faithful History of the Ignorance of the wisest Man would furnish a Volume of no contemptible Size; it were tedious here, and needless to particularize; for we know in Truth but little of Nature intimately and essentially. To have discovered thus much however is no despicable Advance to valuable Knowledge; and must necessarily dispose the most successful Investigators of the Works of Nature, to entertain the justest, the modestest Conception of themselves, and the most sublime Idea of her supreme Lord and Author.

As we were unwilling to omit any Opportunity of making the Narrative of this Case as compleat and particular as possible, for general Information, we wrote to a Surgeon in the Neighbourhood, who, we were assured, had opened the Body, to favour us with the Appearances

pearances of it on Dissection, and with any Observations of his own on them, or on the Fact itself; provided he had no Design of promulgating them in another Manner: In which Case the Society fully intended him that Justice, they will always have a Pleasure in rendering to every obliging and valuable Correspondent. But as his entire Silence to their Letter of the 16th of last October, and to some subsequent and repeated Intimations of it to his Acquaintance, has put this out of their Power, it was thought requisite to make this Apology for our involuntary Ignorance of the State of the internal Parts of this Body; and to wish the Public that more compleat Satisfaction and Information from others, which we have not been enabled to present them on this Occasion. It may be reasonable however to infer, from the sound and inoffensive Appearance of the whole Body, that the very Bowels were but little, if at all, altered.

Our Reasons for ascribing the imputrid State of this Corpse to the antiseptic Influence of Cold (which the Reader will observe is the Cause principally insisted on) might have been  
strengthened

strengthened considerably; from several Passages and Instances in the honourable Mr. BOYLE's natural History of Cold: but as they would have added not a little to the Bulk of this Essay, tho' they must undoubtedly have increased its Value much more, the curious Reader is referred for them to the last Edition of his Works in 1744. Vol. II. P. 272, 273, 275, 276. 343. 383. 391.

Were it allowable here to mention any thing relating to the Member, whom the medical Committee have honoured, by referring this Subject to his Consideration, he might justly observe, that the ensuing Pages would certainly have appeared several Months ago, had not their Publication been repeatedly procrastinated by the Hopes we had, and the Assurances we received from our Correspondent, of hearing particularly from the Surgeon who opened the Body. We have been informed indeed, that his ill State of Health has prevented his Answer; tho' a very small Respite must have been sufficient to inform us of the Condition of the Viscera: But to whatever Causes his Silence may be attributed, it has not been esteemed a sufficient one for a final Suppression of the following Case, and the subsequent Reflections on it.

*To the Members of the Society of Surgeons belonging to his Majesty's Royal Navy.*

*Gentlemen,*

**A**S you were pleased, in the *London Evening Post*, to signify your Desire of being informed of any extraordinary Thing in Nature, I believe the following Account will not be disagreeable.

In the Beginning of *February* last, a Vault was opened in the Church of *Staverton*, about three Miles from *Totness*, in the County of *Devon*, being the Burying-place of the antient Family of the *Worths*. In this was found a single wooden Coffin, which being opened out of Curiosity, discovered the Body of a Man entire and incorrupt. His Flesh solid and not hard, his Joints flexible, as if just dead; which appeared in moving his Shoulder and Elbow Joints, and every Joint of his Fingers. His Fibres retain their natural Elasticity, and likewise his Flesh; all which appeared by drawing out the Skin upon his Throat, and by making Impressions with our

Fin-

Fingers upon his Thighs and Belly, which immediately returned to their former Fullness, and Extension. The Body never was embalmed, as there is not the least Sign of any Incision, and the Bowels seem to be still entire. His Beard is black, and about four Inches in length, and his Flesh not at all discoloured in any Part. The Body was carefully wrapt up in a Linen Sheet, over which was a Tar-cloth, or something like it; a Piece of each you have here inclosed for your greater Satisfaction. The Vault was opened, as I mentioned before, in *February* last, in order to drain off the Water, which was nine Feet deep, tho' the Coffin did not swim, having a Weight upon it to keep it down. The Tar-cloth was very much torn, and likewise the Sheet; so that when I saw it, which was full two Months after, Part of it had lain exposed to the Air all that Time, and the other Part under Water and Mud: The whole was so dirty, that I was forced to have Part of it washed, in order to see distinctly what it was. A Gentleman was with me, who had seen it when first opened, and declared it had not suffered the least Altera-

tion during the two Months. We found, by the Parish Register, that the last Person who had been buried in the said Vault, was one *Simon Worth*, in the Year 1669. An old Man who lives in the Parish, says, that the said Gentleman, whose Body this is supposed to be, died in *France* or *Flanders*, and was brought over to be interred in the Burying-place of his Ancestors. There are many Bones and Pieces of Coffins quite rotten in the same Vault, which they say is dry in Summer, and full of Water in the Winter. As the upper Part of the Head, and the Eyes are under Water, I can give you no Description of them ; the Lips are sound, and some of the Teeth loose. It is not my Business to enquire into the Causes, which produced such an extraordinary and uncommon Effect.

This, Gentlemen, is your Province, and to you I resign it : For my Part, I look upon the Art of preserving an inanimate Carcase from Corruption, as unworthy our Application or Study, any farther than such Knowlege may be of Use for the Preservation of the Living. The only apparent Cause in the present Case is the Tar-cloth, to whose Virtues I am quite

quite a Stranger. The learned Author of *Siris* quotes *Pliny's* Authority to prove, that the *Egyptians* preserved their Mummies by embalming them with Tar. I am very willing to pay all the Respect that is due to the Authority of that ancient Author, notwithstanding his great Credulity and Fondness of every thing that was marvellous: But our Case is quite different; for here is neither embalming with Tar, nor even so much as a Contact. Again, the Mummies, according to the Descriptions given of them, are hard and inflexible, but this is quite the contrary, as we have seen before. I am told, indeed, by those who saw the Coffin opened, that the Tar-cloth had kept the Body quite dry, and that the Sheet was dry and very white, which easily might have been, notwithstanding its present Colour: For when I saw it, it had lain in Mud for two Months (in which neglected Condition it still remains) and I just washed it in a little cold Water, to reduce it to the State in which you now see it. If you desire to know any other Particulars, which may have escaped my Thoughts or Observation, you may have full Information by di-

recting a Letter to Mr. Preston in *Staverton* near *Ashburton, Devon*, who is now the Proprietor of the said Vault, and who, I am convinced, will always be ready to communicate any thing, which may be thought useful to Mankind. If you should think proper to publish your Thoughts on this Affair in the *London Evening Post*, or any other Paper usually sent into the Country, you'll very much oblige your *Western Friends*, and in particular,

*Gentlemen,*

*Staverton,*                   *Your humble Servant,*  
*May 22, 1750.*               *PHILANTHROPOS.*

*P. S.* I just now met with two Gentlemen, who obtained leave to see the Body on the 9th Inst. and found it in the State above described, without any Alteration.

*N. B.* One of them is a Surgeon.

*To the Members of the Society of  
Surgeons, belonging to his Majesty's  
Royal Navy.*

*Gentlemen,*

**I**N Answer to a Letter dated *May 31*, sign'd *James Bensley*, we underwritten declare

clare, that we have seen the human Body now lying in a Vault in *Staverton Church*. We likewise carefully perused the Letter signed *Philanthropos*, dated *May 22*, before it was sent: We then thought, and still continue to believe, that it contained a true Description of the said Body; and that every Article of it was strictly true to the best of our Judgment, witness our Hands,

*Staverton,*

*E Williams.*

*June 5, 1750.*

*Pierce Parry.*

*John Rowe, Surgeon & Apothecary.*

*Wm. Shimell.*

*Sam. Lane.*

*P. S.* It appears by the Parish Register, and other Records, that the last Person buried in my Vault was *Simon Worth*, Esq; in the Year 1669. I was the first who saw the said Body, when the Coffin was opened. It then appeared like a Man lately dead, very white and clean, as described in the first Letter; and the Sheet, in which it was inclosed, white

white and dry. If any Member of your Society will come down into the Country, he shall have full Liberty to view and examine the whole from,

*Your humble Servant,*

J. PRESTON.

Those who have signed are Gentlemen of Credit, and it shall be signed by 20 more, if required.

What I call the Tar-cloth does not seem to be properly such; because the Substance upon it renders it very stiff and hard, and inflexible, where it is entire. If you desire a larger Piece of it, it shall be sent.

*Mr. Preston having favoured us with an Answer to some Queries sent him last October, relating to this Subject, we were obliged, at the same Time, with the subjoined Letter from the worthy Clergyman of the Parish, where the Body was interred, which may be considered as a farther Attestation of the Fact.*

SIR,

S I R,

I Saw the *Staverton* Body several Times, and was present with Mr. *Tripe* twice, when he opened and examined it. I have likewise seen the Register, and examined about the Vault; and believe Mr. *Preston's* Answer to your Queries to be very true; tho' a more perfect Account of the whole, I hope, will be transmitted by Mr. *Tripe*.

I am,

SIR,

*Your humble Servant,*

L. GAVERICK,

*Minister of Staverton.*

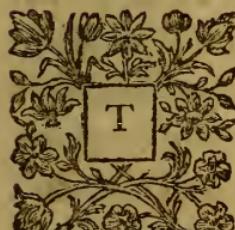


REFLEC-





# REFLECTIONS ON THE CAUSES and CIRCUMSTANCES Preventing or Retarding *PUTREFACTION, &c.*

HE Certainty of this Preservation of a human Body, above eighty Years after its Interment, being thus established, beyond the Suspicion of Illusion or Imposture, by the Testimony of many competent Eye-Witnesses, who had evidently no Purpose to gratify in the Fiction of it; there would not be less Obstinacy in contesting the Truth of it at present, than there must have been Levity in admitting it at first, upon too superficial an Enquiry. That it is not al-

toge-



together a single Instance, even in our own Climate, we are informed by *Rapin*, Vol. 1. P. 691. Note 5, from *Rymer* and *Stow*, as follows: " In the tenth Year of King *Henry the Seventh*, the Body of *Alice Hackney* is said to have been found in the Church of St. *Mary Hill, London*, whole of Skin, and the Joints of her Arms pliable, after having been buried 175 Years." A Term more than double that of the Sepulture of the present Subject at *Staverton*. Not that an extraordinary subsequent Duration will appear the most difficult Circumstance to account for ; a precise Investigation of the antiseptic Cause or Causes, that continued its Freshness beyond the usual Term of Putrefaction, being our principal Intention here ; since, as long as such Causes continue, their Effects will be of the same Duration : And when a dead Body has, without Alteration, past the ordinary Term of Putrefaction, and is afterwards so situated and circumstanced, as not to suffer the least intestine Commotion, or external Friction of its Particles, its Preservation for sixty, or even for six hundred Years, will follow as necessarily as for six ; for meer Duration, considered abstractedly from the

the Intervention of some positive Cause, is an utter Blank and Void, and can effect nothing.

Two or three other very modern, and well attested Discoveries of Bodies, long preserved in St. Martin's Church-yard *Westminster*, will appear in the Course of these Reflections; and were we to indulge an Ostentation of Reading, by quoting luxuriantly on this Occasion, a moderate Volume might be compiled from different Authors, of Accounts, wherein the Bodies are said to have been found entire after a much longer Interment; and some, with still more surprizing Circumstances than any of the present. But this we shall chuse to dispense with, and refer any curious and learned Reader, who may be sometimes entertained with the marvellous, to *Kormanus de miraculis mortuorum*, or to *Gaspar a Reies*, in his *Elysius jucund. Question. Q. 34*, where they may possibly encounter a little Truth, amidst a Heap of Legend, Fable and Superstition.

Notwithstanding the seeming Incertainty of the Causes of this very unusual Preservation of the Body after Death, in Conformity with

the Request of the Gentleman, who obliged us with the earliest Communication of it, we shall offer a few Conjectures on the Occasion. But should we argue rather to Probability than Demonstration here, we are persuaded our Endeavours will be candidly accepted; since their very Errors may suggest something more conclusive to the Sagacity and Penetration of others.

Ourselves, and every Material around us, abundantly evince the perpetual Flux and Circulation of Matter; by no Means indeed as essential to Matter, but as it follows from the various Degrees and Modes of Motion, impressed on it, by the creating and vivifying FIAT of omnipotent Wisdom. We cannot so strictly be said to enjoy a determinate corporal Existence here, as to undergo an incessant Change, from the constant Attrition and Renutrition of our Bodies. Now, tho' the former, the necessary Consequence of \* involuntary

\* We call it *involuntary*, as the Term has obtained, in Contradistinction to these Motions we exert or omit at our Pleasure; tho', strictly speaking, the Motions of the Lungs, Heart, Intestines, &c. are probably accompanied with an habitual Concurrence of the Will, which could not long acquiesce in such a Repression of them, as would be introductory of Pain, and destructive of Life.

Inuntary and voluntary Motion, must be necessary to Health and Life, by abrading the effete and excrementitious Particles of our Mass, in order to their regular and salutary Expulsion; yet the Repair of our Bodies, by the Apposition of others, being the immediate Cause of their vital Duration; whenever our Organs, by Age or Accident, become incapable of assimilating other Materials to our common Substance and Sustenance, those exquisite Motions that continue, and even constitute Life, necessarily determine, whence a very different and tumultuous one soon ensues, sufficiently mortifying to our Pride, and disagreeable to our Senses; by which, however, Nature very generally \* analyzes and disentangles the various Modifications of our

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\* It is very entertaining to contemplate the manifold Contrivance of Nature, in continuing this uninterrupted Succession of Bodies, by as incessant a Dissolution of the Organization of antecedent ones. Most Plants seem to have some peculiar, and perhaps connate Insect, whose Sustenance, or Office it is, at a certain Term, to corrode and destroy the Texture of it. All the residuary Extrusions from the ingested Aliment of Animals, having been accelerated to a putrid State, from their Extravasation, if we may call it such, in the moist and

warm

compounding Principles into that primitive Indivisibility and elementary Minuteness, which is necessary to their re-compounding and constituting other Forms, and to preserving the admirable Series and Succession of her various Productions : So that the Quantity of Matter in our Planet is no ways lessened, and very little indeed of it wholly inert and unemployed. But by what Means the present Extravasation, as we may call it, from this

œcono-

warm intestinal Tube, contract a sudden and peculiar Aptitude for the Reorganization, Growth and Sustenance of others. Rust is the Putrefaction of Metals ; and besides the manifest Depredations of Air and Weather on most Fossils, we are ignorant whether Nature has not provided innumerable Myriads of Animals, imperceptible to the finest Glasses, who may be constantly employed in devouring, digesting and corrupting, each its appropriate Material, which it may be arrived at a certain Power of effecting, after the Material has attained its limited Extension and Duration : And which very Instruments of Putrefaction, becoming alternately the Subjects of it, do, passively or actively, concur in the incessant Dissolution or Regeneration of Forms, from the constant *Metamorphosis* of Matter. We are certain that many Tribes of the Brute Creation are infested by Insects, which are Diseases, and may prove mortal ones to them ; and that many of those Animals are the natural Food and Prey of others. The human Species is visibly liable to fatally vermicular Distempers ; and we are ignorant how many of those, which are ascribed to other Causes, may essentially depend on invisible and indiscoverable *Animalcula*.

œconomical Circulation of Nature, may probably occur, we are now to enquire.

As all Putrefaction supposes some previous Looseness, or Rarefaction, of the Texture of the putrescent Bodies, which, in Flesh Meat, is evident from a preceding Inflation, that terminates in many little honeycomb-like Orifices; and which, in Vegetables, will rise to a visible Fermentation: And as such Rarefaction necessarily implies the Agency of some Heat, it follows, that such a Degree of Cold, as would totally restrain Rarefaction, must, *a fortiori*, obviate Putrefaction also. For Heat, or the Action of Fire, does not more necessarily expand and rarify Bodies, than Cold contracts and consolidates them: so that the different Actions of Heat and Cold may not unaptly be considered as particular centrifugal and centripetal Powers; and this may perhaps greatly depend on their immediate Effects upon so very dilatable and compressible a Body as Air, which penetrates and exists, in some Proportion, thro' all others. Thus Cold retards, and, in a more intense Degree, prevents

Fer-

Fermentation and Vegetation; and does not only sensibly contract our corporal Extension, but even the Surface of the solidest Metals, as Experiments convince us. That it positively does long retard the Putrefaction of dead Bodies, is not only manifest from every Winters Experience, but a Surgeon of Credit, who had been in the Employment of the *Hudsons Bay Company*, assures us, that the wild Fowl they kill there in *September* and *October*, hang up in their Guts and Feathers throughout the Winter, and remain entirely sweet, being thawed and gutted only as they use them. The same Gentleman affirms, he saw one Mr. *Emmit*, a Surgeon there, who went a few hundred Yards from the Garrison to visit his Traps (which they set for furred Animals) whom they discerned to be suddenly Frost-struck, as they term it; and whom, on their speeding to his Assistance, they found dead and stiff; and by the Time they got into the Garrison, his Body appeared as rigid as Stone. Some Histories of the most *Northern Countries* declare, that Persons dying in their severest Seasons are not interred, sometimes for Months, from the extreme Difficulty of opening

ing the Earth for their Reception ; during all which Time they remain entirely inoffensive above Ground : And perhaps, on their speedy Interment, upon the first Facility of opening the Earth, such Bodies, especially if dead from no Abscess, Imposthumation, or putrid Distemper, and interred deep beyond the Influence of their Summer Heats, might continue entire and imputrid for a long Series of Years, or even some Ages. For though a supportable Degree of Cold might prevent the Putrefaction of a dead Body, not actually begun ; it would probably require a very rigid one to restrain the Progress of it ; since Putrefaction is accompanied with a considerable Expansion of the inclosed Air, and generates Heat, as we are sensible, that the very Rarefaction previous to it in vegetable Matter, with the Assistance of some Humidity, will operate even to the Production of Flame.

And indeed Cold will not only restrain and prevent Putrefaction, simply, as it implies the Absence, or Inaction of Fire ; but as the congealing Degrees of it efface and alter that Humidity, which is as necessary a Circumstance

to the Putrefaction of animal Bodies, as it is to Vegetation, or the Fermentation of Vegetables: For Materials less sensibly abounding with it, as different Fossils, old Timber and the like; and others, from which it is, in a great Measure, evaporated, as withered Vegetables, become friable, and crumble into Dust or a Kind of Calx, from meer Arefaction, which may indeed be considered as one Mode of Putrefaction, tho' unaccompanied with that offensive *Fætor*, which generally enters into our Idea of it. This Arefaction may partly depend on the expanding Power of the inclosed Air, excited by some latent or adventitious Warmth, and no longer restrained by that sufficient and anti-elastic Humidity, which may be considered, both as a constitutive Portion of the Substance itself, and as a necessary *Medium* for the entire Connexion of its other component Particles. And as one Preservation of dead Bodies seems the Effect of great Cold, by its expelling, or concentrating, the Fire, and by consolidating their Humidity, a vehement Heat produces another, with different Effects and Appearances, by a copious and speedy Evaporation of it. This seems to be the Case of those preserved Carcasses sometimes found

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in the Sands of *Lybia*, &c. where indeed the great Dryness of the Soil may co-operate by its Absorption ; but without which Circumstance, we have frequently seen the Flesh of esculent Animals preserved by Evaporation, from the meer Heat of the Sun, even in Climates without the *Tropic*.

Thus we see that some Heat and Moisture, the same Principles which are necessary to the vital Information of Matter, are also requisite to dissolve and unravel the Organization of it ; their opposite Effects arising from a great Diversity of their Motions, which, in animal and vegetable Life, are regulated by the most exquisite Contrivance, to modify and ascertain the proper Degree of Heat, (by adjusting the continual Increase and Avolation of it) and to overcome the natural Resistance of Gravitation ; but which, in the Putrefaction of Bodies, seem greatly to depend on the elastic and centrifugal Force of the included Air, without whose secret *Pabulum* as human Life cannot exist, nor Fire operate ; so on the absolute Absence, or compleat Repression and Quiescence of this Element, 'tis probable every

Tendency to Motion, in a Body so circumstanced, must cease, and all Putrefaction of it be consequently supernatural; how bold soever the Assertion may appear, without a further Reflection on it.

But as it is evident, this Body has not been preserved by Desiccation from Heat, so it must be confessed there is some Difficulty in reconciling all the Appearances of it to the Efficacy of extreme Cold; such as the entire Flexibility of the Joints; the soft and yielding, tho' elastic, State of the Teguments, and the Growth of the Hair and Nails; tho' perhaps some rational Conjectures may be offered even on those Appearances. Suppose this Person to have died in very cold Weather; and, as we are equally uncertain of the Season and Disease, of some sudden, but no inflammatory or putrid Distemper (since for Arguments Sake we may suppose an instantaneous Extinction of the vital Spirits, or a total Interruption of them in all the Nerves that go to the Heart) and then, during the Continuance of the cold Weather, to be conveyed to this Tomb of his Ancestors, and there deposited

sited below the deepest Influence of the Sun in our Climate. Under these Circumstances we find it not very difficult to conceive such an intermediate and equable, tho' cold, Temperature of the Air in the Vault, that it might not amount to such a Degree as to render the Flesh hard, and the Joints inflexible, by a rigid Congelation of the Fluids, and the oily Mucilage of the Joints; tho' sufficiently cold to prevent any Expansion of the Air within the Corpse, and all Disposition to Putrescence in *such* a Body. And all these Circumstances constituting the very Line, or Point, as we may call it, of this least changed and just quiescent State of a dead Body, from a Want of all intestine Motion in its Particles, will not afford us the worst Reason for its occurring so very rarely, as to render the Belief of it difficult to those, who attend more to the obvious and ordinary Motions of Nature, than to such a rare and secret Pause of them, as the present Instance seems. In fact we find, from the Efficacy of Ice-Houses in very hot Summer Countries, that a much less Degree of Cold, than what produces Ice, will suffice to preserve it in that Form after Congelation; as the inferior Air and Earth, a few Feet be-

neath



neath the Surface, become cooler, till at greater Depths they prove again more warm and moist, and, in some Places, so impregnated with Damps, as suddenly to extinguish both the vital and culinary Flame.

Neither is it necessary that this preservatory Degree of Cold, we have mentioned, should be intense enough to prevent the peculiar Vegetation of the Hair and Nails, which may be compared to that of some Plants, that bloom and flower in our Winter Solstice, and appear to be invigorated from the relative Impotence of the Sun. For we should not too unphysically conclude, that the same Temperature of Air, which affects us with the Sensation of Cold, may not constitute the proper, tho' obscure, Degree of Warmth, necessary to the Exertion and Nutrition of other Productions; especially when such incontestable Effects countenance this Conjecture. Nor is it unworthy of Remark here, that in the very coldest Climates and Seasons, the Furs of Quadrupeds, and very probably the Down of Birds, are thickest and closest; the final Cause of which is more obvious than the efficient.

Very

Very probably indeed, the total Suppression of Sweat, and the Diminution of insensible Perspiration, at such Seasons, may be the principal Cause, by rendering the whole Habit more succulent, without any Abatement of the *Calidum innatum*; as we observe the Inhabitants of the colder Regions generally more robust than those of softer Climates; and see some Animals wax fatter in the very Season, that has either destroyed or buried their usual Food. And further, when the most sagacious Anatomists inform us, the Hair and Nails are augmented by a peculiar Protrusion, and have, at least, lymphatic Vessels for their Augmentation, but no refluent Vein to return any *Residuum* of the nourishing Humour, it may not be altogether so difficult to conceive how they may be extended, even after the Termination of that regular Circulation of Fluidity, and that bland Temperature and Diffusion of Heat, which is necessary to Life. The little bulbous Roots of the Hair, and tenderest *Laminae* of the Nails, at their Origin, are probably spongy enough to absorb any contiguous Moisture, which being successively attracted into their Cavities, where it attains a proper Consistence

fistence and Induration, and very gradually extruded from thence by the continued Intumescence of the first absorbing Part, may, for some Time, produce that Growth of these Parts, which is so often asserted to have been observed on dead Bodies. This we suppose to be effected independent of the intestine Motion that precedes, and the tumultuous one that ensues on Putrefaction, which might perhaps, for a short Time, even accelerate their Growth. And in imputrescent Bodies, it seems probable this Growth is generally effected rather within an early, than at a very late Term after Death; tho' the Equability of the Growth might well depend on that of the Humidity; for in any Bodies preserved by that immediate and extreme Congelation, which must entirely efface or petrify their Moisture, it appears reasonable to imagin such a Vegetation would scarcely occur.

Hence may we infer, it is no ways necessary, that the vegetable Principle of those Appendages to our Body should expire instantaneously with the vital one: And it may be analogically observed, that some felled Trees,  
and

and particularly the hairy-leaved Tribe of Pines, frequently protrude fresh Leaves through the Bark, some Months after they have been felled, and indeed after they have been cut into Poles, and erected into a Worm-Fence, lying horizontally on each other, and without the least Communication with the Soil ; to say little of the Moss, and the much harder Excrescences, which are often extruded from decayed Trees. We submit it how far the moist Vapours of the Vault might concur to this posthumous Vegetation, and possibly contribute to the Flexibility of the Joints, and that soft and elastic Plumpness of the Flesh and Teguments, which seems the most requisite Condition of them for the Production of this *Phænomenon.*

The Duration of the Coffin, and even of the Linen that involved the Body, for so many Years, in a Place alternately wet and dry, seems at first surprizing : And yet when we recollect the much longer Duration of Paper, which may be considered as a macerated, and much weaker, Linen, our Surprize must abate ; and become very inconsiderable, when we reflect

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on the little or no Friction of any Bodies in this cool, damp and inelastic *Medium*; as we repeatedly insist, that either an external Friction, or intestine Motion, is indispensable to the Wearing or Decay of Bodies. The Duration of the pitched or plastered Cloth will be little wonderful; tho' it does not readily occur to us, what other Share it could have in the Preservation of the Body, than by defending it perhaps from any vermicular Insects: for the *Ægyptian* Mummies seem deprived of all animal Moisture; and appear, except the bony *Compages*, to be little more than an aggregate Mass of gummy, aromatic and bituminous Substances, involved in a Multitude of Swaths and Bandages. It is said indeed to have kept the Body dry, but admitting this, (however difficult to conceive, for so long a Term, in so wet a Situation) it has been advanced by a great Man, \* that Bodies, in general, are longer preserved from Putrefaction in Water, and beneath the Earth, than when immediately

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\* Generaliter quæ sub terrâ, et in cellis subterraneis, aut in profundo aquarum reponuntur, viorem suum diutius tinentur quam quæ supra terram. *Bacon.* Hist. Vit. et mort. P. 118.

ately exposed to the Air ; the Truth of which, either at considerable Depths, or on the frequent Effusion of fresh cold Water, seems probable enough.

As we have mentioned Mummies, which are not without some Relation to our Subject, it may be observed, that the Preservation of dead Bodies by Evisceration and Embalming, is not an entire, but partial, one, by removing some of the solid, tho' moister and more putrescent Parts; by a considerable Dissipation of the natural Moisture of the whole; and by a Destruction of the Homogeneity of the Body itself, from the copious Immixtion of many heterogeneous Materials, which may be considered as so many Processes, or *Intersejimenta*, of an imputrescent Nature, that might, as such, give some Delay or Obstruction to the Process of Putrefaction, abstracted from their drying and absorbing Influence on the Humours. Besides many Salts (which we may hereafter mention) most Gums, Aromatics and Bitters, (for it were tedious to enumerate Particulars) are found conducive to this Purpose; and there has not been want-

ing such a Degree of physical, or more justly, unphysical Enthusiasm in Writers, as to suppose the dead Bodies thus preserved to have some extraordinary medicinal Virtues, beyond what the other Ingredients, without the Addition from a dead Carcass, could pretend to: So that some have been particular enough to specify the Kind of Death, the Constitution and Age of the Person (to which they might have added the Sex, Complexion and Country too) whose Reliques were to conspire towards this grand Alexiphamic, as they have termed it. But it is to be hoped the present Physiologists will ascribe all the Virtues the Carcass has added to the Composition, to the same exquisite Reasoning, which attributes much Efficacy to the Moss or Raspings of a human Scull, to the Touch of a dead Man's Hand, and many other equal Absurdities. But to return more directly to our Subject.

Though the supposed imputrid State of the present Subject, at the Time of the Person's Decease, and the general antiseptic Influence of Cold ever since its Interment, (which in the coldest Climates has occurred perhaps oftner than it has been attended to) suggest the most

most specious Solution of the Preservation of this Body, of any, that have presented themselves to our Reflection upon it ; yet, on such an Occasion, it may not be wholly improper, however simple and obvious, to mention the Preservation of Flesh by Salt, a Pickle of which, assisted with Alum, is affirm'd to preserve the very Bowels of the human Body from Putrefaction for Years. This Effect must principally depend on its hardening each Fibre, and constringing the whole in such a Manner, as to prevent any Rarefaction of the Substance, and consequently all intestine Motion of its compounding Parts ; and in fact we are certain that Salt greatly resists Fermentation. Dr. *Willis* ascribes the Acidity of Vinegar, a noted Anti-putrescent, to the Fusion and *Fluor* of the vegetable of Salt of the Wine, after an Evaporation of its more spirituous Parts ; which is similar to *Homberg's* Sentiments of Acidity. Besides it is not wholly improbable that these Salts, to which we might well add that great Anti-putrescent, Nitre, even when reduced, by Solution or Triture, to their smallest Dimensions, may still preserve their external Polish and Lubricity, as well as their *Spicula* and Sides, and hence more effectually resist

resist, or elude, the depredatory Ingress or Impression of the Air, by involving every Line and Fibre in a fine polished Pellicle. The glistering Appearance frequently observed on a transverse Section of the Fibres of boiled Beef, well preserved and highly saturated with Salt, where the Surface reflects a Variety of Colours, not without some little Resemblance to the common Effect of Prisms, seems to confer some Probability on this Conjecture. It is evident also, that different Bodies are preserved in some such Manner, by the vegetable Salt of the Sugar Cane, whose Solutions afford a very glutinous and gum-like Varnish; and whose Chrystallizations assume even a vitreous Lubricity and Hardness. We were considering what might probably be the Consequences of an imputrid dead Body's being interred in the Salt Mines of *Poland* or *Hungary*, or in *Strata* strongly impregnated with Alum, or Nitre, when looking over *Pinaccher des Embaumens*, we found an Account of a dead Body \* taken out of the Salt-Mines of *Saltf-*

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\* P. 120. in P. 126. he mentions their having seen two imputrid Bodies at *Paris*, in two Church-Yards, amidst many

*Saltbourg*, with the Skin entire and white as Snow, the Joints flexible, the Flesh soft, the Eyes open, and, as it were, animated : But being exposed to the Air three Days, for the Inspection of the Duke of *Bavaria*, who was coming to visit it as a Prodigy, it soon putrefied. It is affirmed, that Meat newly killed, being carefully dried from its superficial Moisture, wrapped close in dry Linen, and then plunged into a Barrel of good dry Salt, will not only keep sweet for some Weeks in extreme hot Weather, but will also prove as succulent and palatable as fresh, on its being dressed as soon as taken out of the Salt. This Experiment may be easily made, and if the Barrel was lodged in a cold Cellar, or buried several Feet under dry Earth, it might not succeed the worse. But as any of these Salts, or Springs, or *Strata* strongly saturated with them, could probably have little Influence on the Body at *Staverton*; since they must have acted equally to the Preservation of the other Bodies

any putrid or pulverized Bodies, and adds these two were removed into a different Situation, to avoid the indiscrete Zeal of the Multitude, who thronged to admire (or perhaps to adore) them.

Bodies in the same Vault, or even throughout the Church-Yard, this is only mentioned by the Way. It may be worth remembering however, that when the Body of Duke *Humphry* was discovered entire at St. *Alban's*, many Years after its Interment, some Liquid, whether muriatic or otherwise, was found in the Coffin. Dr. *Balguy* has also furnished us with an Instance in the Philosophical Transactions, No. 434. P. 431. of the Peat or Turf-moss in the Moors of *Derbyshire*, preserving two Bodies 28 Years and nine Months after their Interment; with this remarkable Circumstance, that having lain from *January*, when they perished there in the Snow, to the following *May*, when they were interred, the Bodies were then become offensive; though near 30 Years after, that disagreeable Circumstance entirely vanished; the Joints were flexible, and the Surface white and fresh like this at *Staverton*. So that this *Stratum*, which is ordinarily converted to Fuel, seems to have the Virtue of conquering even the Progres of Putrefaction; and in this Instance we have no Hint of a Tar-Cloth,

Cloth, nor can we reasonably suppose any to have been applied.

And here, as well to corroborate the preceding History from *Staverton*, as to make it probable, that the Pitch-Cloth was not the grand Antiputrescent in that Instance, we shall insert a Relation, given to five Members of the medical Committee (by the present Grave-digger of St. *Martin's, Westminster,*) of the Condition of some Bodies interred there in the last Century ; which have been seen, and whose Preservation can be attested by many Witnesses of undoubted Veracity and Repute, now living in *Westminster*. Mr. *Ogle*, a very creditable and worthy Inhabitant, who had been Church-Warden, who saw those Bodies, and took off some green Worsted, which connected the great Toes of one of them, was also present, and confirm'd the Grave-digger's Account.

About fourteen Years ago *John Leigh*, the Grave-digger belonging to the Parish of St. *Martin's in the Fields*, broke up the Ground before the Door of the Work-house in the

Church-yard, which had not been broke up before in his Memory, tho' his Father and himself, who is now pretty aged, and lives in the said Church-yard, have been the Parish Grave-diggers 53 Years. He then and there found three entire Coffins, which were made of Firr, the two large ones clamp'd with iron Clamps, as Chests and Boxes sometimes are. In one of the Coffins was a fat broad-faced Man, greatly resembling the Pictures of King *Henry* the Eighth, the Body perfect and soft, seeming like one just dead. The Lid of the Coffin had been glewed together length-ways, and was press'd down by the Weight of the Earth upon his Nose, which was impaired a little by it. His Beard was about half an Inch long, the Winding-Sheet the Body was wrapt in was a Crape Winding-Sheet, tied with black Ribbons, and the Thumbs and Toes were tied with the like. It appeared by the Date on the Lid of the Coffin, he had been then dead seventy-two Years. The Date was composed with small Nails, as were also the Figures of an Hour Glass, a Death's Head and Cross-Bones.

In the second Coffin was found, in the same entire State, the Body of a Woman, in a white Crape Winding-Sheet, which looked like a Corpse just dead, but which, by the Date on the Coffin, had been interred sixty-four Years. The third Coffin contained a Male Child, appearing as perfect and beautiful as Wax Work, with the Eyes open and clear, but no Date could be discovered on the Coffin; tho' it must have been interred a long Time, that Ground not having been broke up before, in this Grave-digger's, nor in his Father's Memory. In either the Man's or Woman's Coffin was found a dry Nosegay of Flowers, or a \* Winter Nosegay, as he termed it, in part composed of Bay Leaves, and which appeared like a Bunch of Leaves and Flowers, that had lain among Linen about a Year. Mr. *Leigh* concluded by saying, there was a great Number of Inhabitants now living in St. *Martin's* Parish, who saw those

## E 2 Bodies,

\* This Appearance reflects a considerable Probability on our Conjecture of the Causes that might concur to the Preservation of the Body at *Staverton*; and not the less for our making that Conjecture, before we had the least Intimation of the impudic State of these Bodies at *St. Martin's*.

Bodies, and that the Coffins are at this Time entire in the public Parish Grave, tho' the Bodies were greatly altered within twelve Hours after they were first exposed. He says they were interred in a dry gravelly Soil, at the Depth of about 18 Feet, tho' Mr. Ogle thinks it might be some Feet less.

Here again we have no mention of any Tar-Cloth involving any of these Bodies; yet to give the fairest Scope to its anti-putrescent Pretensions, let us consider the Instances of Flies; Gnats, and other little Animals preserved in Amber, who, as Lord BACON observes, thus enjoy a more noble Monument than Monarchs. But here we cannot avoid reflecting at once on the great comparative Levity and Minuteness of the contained Body, with the Solidity and Compactness of the containing; the Bulk and Tenacity of which must effectually resist every Effort of the small Quantity of Air, contained in the Body of such an Insect. But a large fleshy human Body, and a single pitched, or plastered, Cloth have the same Disproportion inverted; as such a Body would probably require a large Mass,

Mass, or even a Rock of Amber or Pitch, to preserve it on the same Principles. For supposing a dead, but imputrid Body, to be so exactly involved, as to prevent the least Admission of the external Air, in a massy Case of Glass, Chrystal, or any Material of sufficient Density and Hardness to repress every Motion and *Impetus* of the Air within the Body, it's probable the Putrefaction of it could not ensue; and even without such a Covering, were it practicable to extract every Particle and Atom of Air from such a Body, and to repose it instantaneously, in that State, in absolute *Vacuo*, 'tis likely it must remain unaltered until the Conflagration, thro' a total Exemption from every Degree and Mode of Motion, the indispensibly previous Cause, the *sine qua non* of Putrefaction; as the total Privation of Motion is leaving Matter to its primary Inertness, and consequent Immutability. In short it seems reasonable to infer, that a single Cloth, moderately coated with Pitch, could do little more here, than keep off Insects by its Bitterness and Tenacity; and perhaps elude the Depredation of any Air in the Coffin or Vault, by its close and

and smooth Involution of the Body, the common Purposes for which dry anatomical Preparations are usually varnished, after they have been defended from Putrefaction, by an Exhalation of their abounding Humidity.

The too frequent Consequences of putrid and ardent Diseases abundantly convince us of the high alcaline Putrescence our whole Mass is obnoxious to ; and of the Necessity of the speedy Interment of such corrupt Masses, for the Preservation of the living, especially in torrid Seasons and Climates. In the *Madeiras*, where there is very little Soil for the speedy Absorption of such Putridity, and where the Rockiness of the Islands renders it extremely difficult to make Graves, of the ordinary Depth, for the Interment of the Dead, they have found it expedient to accelerate the entire Dissolution of the Carcass, by intimately blending a considerable Quantity of unflackled Lime with it. This should seem to operate chiefly by super-adding such a Quantity of included Heat, or potential Fire, as violently expands the Air in the Body to a speedy Destruction of the whole *Compages* : For the Quick-

Quick-lime, meerly as an *Alcali*, could scarcely produce so precipitate an Effect ; as the slackened Lime is reckoned, by the Embalmers, an Anti-putrescent, and chiefly, we suppose, from its absorbing Quality. Now very possibly a State of the Fluids, tho' directly opposite to this mortal *Alcalescence*, may exist in such an extreme Degree, as to render the Machine inadequate to the Functions of Vitality, while at the same Time it obviates its general Tendency to a putrescent Dissolution. A little Attention to the Diversity of *Menstruums* and Liquids, necessary to the Dissolution or Preservation of different Substances, may reflect some Light on this Matter. We are sensible that strong distilled Spirits, an habitual Sipping of which acts like a flow, and a large undiluted Quantity like a sudden Poison, on the living Body, will preserve it, when dead, for a considerable Term. We frequently experience the sweet or sapid Juices of Fruits, which affect the nervous *Papillae* of the Tongue with very agreeable Sensations, to excite intolerable Anguish in those nervous Filaments, that are distributed to the Teeth and their Sockets : And indeed upon this Principle

Principle depends the Efficacy of those Medicines, which render the human Urine capable of dissolving the Continuity of a Stone, and often without doing any considerable Injury to the Membranes containing both. Perhaps it is not very easy to assign the precise Diseases (especially if we except a mortal one from actual, sudden and extreme Frigefaction) which may dispose our Fluids to such a peculiar *Crasis*, as shall be inconsistent with Life, while it resists the general Process of Putrefaction after it. But as, with many other nervous Diseases, we are ignorant of the intimate Nature of a *Catalepsis*, where the Body generally becomes rigid long before Death ; so it may, for any Assurance we have to the contrary, continue firm and entire under Ground long after it. All Bodies dying from a sudden and strong Coagulation of the Fluids, and a great Rigidity of the Fibres, may, not improbably, be longer exempted from Putridity ; and in some perhaps even a muriatic State of the Humours may operate to a similar Effect, with the Injection of Brine into Animals newly killed, for the Preservation of their Flesh. The Philosophical Transactions afford

afford us an Instance of a Girl, who was become inflexible in every Joint, from an excessive Use of Salt; the Consequence of which indeed was the Determination of her Life at the Age of Thirteen: But whether her Corpse, which is mentioned as dry and tabid, was of an unusual Duration afterwards, the History, which descends not into the Grave, is silent. See *Lowthorp's Abridgment*, Vol. 2. P. 365.

It will be little surprizing, that few medical Inferences result from these Reflections on the Preservation of a dead Body; since, whatever Effects any of the enumerated Causes may produce on *such*, the Consideration is very different and complex, when their Operations do either heighten or retard, or may be heightened or retarded by, the mechanical Motions of our Frame; and may reciprocally affect, or be affected by, the different Tone of our Solids, the *Crasis*, of the Blood, or the various Liquids secreted from it. As the present Subject is not necessarily connected with such diffuse and important Considerations, to avoid any further

Prolixity on so conjectural an Occasion, we shall conclude by observing, that if any thing suggested here should prove satisfactory, or even acceptable, to the Curiosity of others, it may prevent us from too precipitate an Inference, that every thing which is very unusual, is so impossible also, as not to deserve our Inquiry and Deliberation. We mention this the rather, as, to be ingenuous, we must acknowlege, we were not the very earliest Assentors to the Relation from *Staverton*; tho' now convinced, that while we guard assiduously against every Delusion, which Superstition embraces, or Imposture would propagate, we should not forget that Unbelief may be sometimes as unphilosophical and indolent as Credulity itself, by branding with Impossibility such Facts, as are only very difficult to investigate to their Causes. And if on the other hand, neither any thing suggested here, nor to be expected from any Member of another Society, of much greater Learning and Penetration, shall be thought to furnish an adequate Solution of this Effect, its Certainty may very morally admonish us of the slender and superficial

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**Quality of human Knowledge.** For notwithstanding many Researches and Discoveries of the Moderns are not without their real Merit and Importance, it is very probable, the profoundest Investigators of Nature meet with the most frequent Opportunities of exercising both their Modesty and Admiration. More particularly the vast *Incognita* beneath us is not less spacious, and must be more wonderful than that on our Surface. Finally, it is a most certain and incontestable Truth, that the united Experience and Penetration of our whole Species is insufficient to inform us, when, and by what precise Means, the Element, that has lately so often, so extensively, and in a very late Instance, on the Coast of the *Adriatic*, so destructively struggled towards our Surface, shall at last triumph over every Impediment; and, utterly effacing the Arch, on which we sport with such Confidence, and bustle with such Anxiety, shall effectually anticipate every human Enquiry, to which it must have been superior.

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# P L A N

(Referred to in the Preface)

By the Society of NAVY SURGEONS.

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IT IS AGREED,

I. THAT a Committee of Twenty-five Members, and honorary Members, do collect and revise all such Essays, Observations and Cases in Physic, Surgery, Anatomy, the Animal Oeconomy, Pharmacy, Chemistry, Botany and Natural History, as may be transmitted to them by the Members of the Society, or by any ingenious and obliging Correspondents: That the Physician of Greenwich Hospital, and the Demonstrator of Anatomy be, *ex officio*, of the Committee: That the Meetings be held at the Society's Apartments; the first to be on *Monday, May 7th, 1750*, and all subsequent ones at such Times as the Committee shall appoint.

II. That as one considerable Purpose of this Undertaking is to pursue, particularly, such Branches of medical Knowledge, as fall

more

more immediately under the Observation of the Navy Surgeons, who may be reasonably presumed to have Advantages, for some particular Disquisitions, peculiar to their Situation; such as——an Opportunity of enquiring into the Nature of Sea Diseases, and any specific or material Difference between them and those at Land;——of observing any particular Effects of Medicines at Sea;——the common Effects of the principal Operations of Surgery on that Element; especially where any remarkable Diversity occurs from their general Events on Shore; and any different Success of the same Operations in different Climates, at Sea and Land;——the Effects of Sea-Air and Diet in general, in various Diseases, and the particular Changes of the Constitution produced by them, under the Co-operation of different Seasons and Climates;——the various Distempers endemic on their different Stations; and any remarkable Diversity in the Symptoms, and the general Event of the Disease, between Natives and Strangers; with the usual Method of treating such Disease, or its ordinary supervening Symptoms, by Practitioners of the best

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Note and greatest Experience, in those Countries, and the most frequent Consequence of it.—It is therefore strongly recommended to them to be carefully attentive to those very material Articles: And further to improve every Opportunity of informing themselves, of the popular Methods of treating different Distempers in those Places, where Physic is little cultivated;—of attaining the natural History of the Country; —the Weather ; —the Animals ; — Plants (especially all indigenous physical ones) and Fossils ; —to endeavour to discover the Process and Manufacture of any Drugs in it ; —and to furnish themselves with the best Collection of such Productions, as they can conveniently procure. But to prevent the Multiplicity of Volumes, without adding to the Stock of useful Knowlege, It is agreed, that no other Cases or Observations in Physic or Surgery shall be published, but such as may be instructive in their own Nature, or render'd so, by judicious and extensive Reflections deduced from them, in order to the Establishment or Confirmation of general Axioms.

III. That every Member employed on board any of his Majesty's Ships, appointed to the BALTIC, MEDITERRANEAN, EAST-INDIES, or AMERICA, shall favour the Committee with a seasonable Notice of his Voyage, that they may have Time to prepare, and recommend to him, such Memorandums and Instructions, as they may judge necessary for the Service of the Society, and conducive to the laudable Intention of this Plan.

IV. That all Papers, intended for the Promotion of this Design, be directed for the Committee, under Cover to Mr. *Millar*, Bookseller, in the *Strand*, with a Direction where to address the Author or Correspondent, if a more particular Attestation of the Facts, or an Elucidation of any Circumstance of the Case, may be judged requisite. That the Name of each Author or Correspondent shall be faithfully concealed, if required: But all anonymous Papers, where any Stress is laid on Facts, must be necessarily disregarded on this Plan, without a satisfactory Attestation of their Reality.

V. That if the Publication of any thing, communicated to the Committee, shall be deemed

deemed inconsistent with their Plan, in Consequence of which the Author shall think himself neglected, or disingenuously dealt with, he may apply to them at Pleasure, to be informed of their Motives for not publishing it, and may depend on receiving all reasonable Satisfaction on their Part. And that as soon as proper and sufficient Matter is collected for one Volume in Octavo, it shall be digested for the Press and published.

VI. That each of the Members, who transact the Business of the Committee, shall have a Copy on large Paper of whatever shall be printed; that six Copies, on the same Paper, shall be deposited with the Society, for their Use, and at their Disposal: And that a golden Medal be given annually, as a Prize to the Author of the most useful Paper, communicated to the Committee, within the Purpose of this Plan.

VII. That all Expences, which the Committee shall find necessary to the effectual Conduct and Accomplishment of this Undertaking, shall be allowed out of the Society's Stock.







